

under the name of *Mustela angustifrons*. Similar ridges, relatively less well-developed, exist in the Gray Fox.

The orbits are as little distinct from the temporal fossæ as in the Skunk or the European Hedge-hog.

The cranium back of the orbital spaces is conoidal and wider than high. It is narrowest just back of the postorbital eminences; relatively not so much constricted as in the Mink or Fox, though more than in the Skunk or European Hedge-hog.

The face is long, and tapers evenly to the end of the snout.

The palate is long, narrow and moderately arched, and exhibits no large perforations as in the Opossums.

The fossil retains most of the teeth, the number of which consists of seven molars, a canine and two incisors.

Of the molars the posterior four have broad trilateral crowns, with a number of points or tubercles, as in the Opossums and Hedge-hogs, or the back two in the Dog. The anterior three molars have simple, compressed conical crowns. The canine is comparatively small. Whether the animal possessed more than two incisors on each side is uncertain.

Measurements from the specimen are as follows:

Estimated length of skull from occipital foramen to fore part of incisive alveoli.....	29 lines.
Length of cranium from union to fronto-nasal suture.....	18½ "
Breadth at zygomatica.....	17½ "
Length of palate.....	15½ "
Length of molar series.....	11 "

*ICTOPS DAKOTENSIS*. This name is founded on a small fragment of a skull which was obtained with the preceding. At first the specimen was supposed to belong to the same animal as the former. It clearly indicates a skull of nearly the same size and shape as that of *Leptictis*.

The fragment consists of a portion of the face, containing the remains of most of the molar teeth. The face appears to have had nearly the same form and construction as in *Leptictis*, and the forehead exhibits traces of the two peculiar ridges defining the upper part of the temporal fossæ in the latter.

The remains of the molars consist of the posterior six. The second premolar appears to have been a two-fanged, conical crowned tooth, as in *Leptictis*. The third premolar has a trihedral crown, inserted by three fangs, whereas in *Leptictis*, as in the preceding tooth, it has a simple conical, crown with a pair of fangs.

The crown of the third premolar of *Ictops* is composed of three principal lobes, two external and the third internal. The four back molars have the same relative position and size as regards one another as in *Leptictis*, but they do not project abruptly beyond the premolars externally as in this. Their crowns, so far as can be ascertained, appear to have had the same construction as in the third premolar.

The space occupied by the back six molars in *Ictops* is ten lines, being a little more than in *Leptictis*.

#### Observations on REPTILES of the Old World. Art. II.

BY E. D. COPE.

CHAMELEO BASILISCUS Cope, sp. nov.

This species pertains to group *α.* of Gray's arrangement of the species of this genus (Proc. Zool. Soc. Lond., 1864), that is, is nearest allied to *C. verrucosus* Gray, and *C. calypttratus* A. Dum. It has therefore a high longitudinal crest on the supraoccipital region, and the supraoccipito-mastoid crest is not furnished with any dermal margin of flap behind, but is the margin of a truncate face which is minutely scaled. No dorsal or ven-

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tral crests except a few conic scales above the scapulæ. Gular region with a weak crest.

The occipital elevation is vertical behind, the lateral ribs but little oblique, and joining the superciliary crest at a little more than a right angle. Median crest very convex, nearly vertical below. Superciliary crests continuous, not arched, descending straight and obliquely to the muzzle. None of the crests dentellated. Scales everywhere granular, equal. Nine rows of subequal scales between lateral and median occipital crests; six between canthus on the muzzle. Tail little compressed.

Color gray and leaden, with yellow shades. Three blackish radii back of orbit. A yellow band from chin to vent.

Total length 12 in. Muzzle to vent 5 in. 4.5 lines. Muzzle to orbit 6 lin. Length of hind limb 2 in. 6 l.

This species was obtained at Korusko, Nubia, by Prof. H. A. Ward, and placed in the Museum Peabody Acad., Salem, Mass. No. 489.

This Chamæleon resembles the *C. vulgaris*, and is intermediate between it and the *C. verrucosus*.

It may be observed that the *Chamæleon burchellii* of Hallowell cannot be regarded as more than a variety of *C. granulatus* of the same author, and that *C. capelli* Du Bocage appears to be the same so far as the description goes.

*PANASPIS ÆNEUS* Cope, sp. et gen. nov. Scincidarum.

*Char. genericus.* Allied to *Morethia* Gray, differing only in the distinctness of the fronto-parietals from each other and from the interparietal, all three being united in the latter genus. No eyelid; a supranasal; rostral not prominent. Limbs short, toes weak, 5—5. Scales smooth.

*Character specificus.* Scales large, in twenty-four longitudinal series. Two loreals, one behind the other; two preoculars, one above the other. Fronto-nasals broad as long, separated by frontal, which reaches the internasal. Frontal acute behind, smaller than each frontoparietal, but a little larger than the interparietal. Lateral parietals meeting behind the last named, and followed by two transverse scales each. Superciliaries and suparorbitals four each. Two large marginal anal scales.

General proportions slender, the head remarkably so, the tail proportionately stout. The appressed extremities do not meet by the length of the longest finger. Toes 1 and 5 equal, 3 and 4 nearly so, elongate. Inner finger very small. Superior labials eight, fifth immediately below orbit, last three scale-like, large; anterior quadrate. Tail with cross scuta beneath.

Total length 3 in. 5 lin. To vent 15 l.; to axilla 6 lin.; to ear 3 l.; to orbit 1.2 l. Length fore limb 3 lin.; hind limb 4.5 l.

*Color.* Golden olive above, darker behind, with a narrow golden line on each side from the temple to the base of the tail. Sides above darker, below lighter, pale spotted. A whitish line from below eye to near axilla. Limbs and tail above brown, with small round white spots; below greenish white; tail pale brownish beneath.

*Habitat.* Probably Swan River, Australia; possibly from South-Western Africa.

*Name,* from its complete cephalic scutellation, all the plates usual among lizards being present.

*EUMECES PERDICOLOR* Cope, sp. nov.

Twenty-eight series of broad scales on the body, all entirely smooth. Body fusiform, the limbs very short, with short but unequal toes. Tail cylindrical.

Rostral plate low, broad, prominent, but not acute. Infranasals as long as broad, largely in contact. Internasal much broader than long; fronto-nasals small, widely separated. Frontal long, rounded behind; fronto-parietals well in contact, large, rounded behind; inter-parietal smaller than the latter, parietals well in contact behind it. Dorsal scales equal, a little

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smaller than ventrals. Ear large, membrane deeply placed; no marginal tubercles or scales. Nasals not divided; preloreal higher than postloreal; two preoculars. Superior labials seven, fourth long, below orbit, no sub-orbital plate. A transverse symphyseal, and broad transverse mental. Inferior labials seven. Five supraorbital plates. Scales in front of vent equal.

	In.	Lin.
End of muzzle to vent.....	3	3
“ “ to axilla.....		13
“ “ to orbit.....		2·7
Length of fore limb.....		5·9
“ hind “.....		8·2

Color above brown, uniform on the back, each scale with a large white spot near the centre, on head, body and tail. Lower labial and gular scales white, with a brown spot, upper labials brown, with a white spot; white below, all the scales brown edged; in a younger specimen laterally, only in an older all round.

This well marked species is a native of Zanzibar. Mus. Academy and Peabody Acad. No. 499. From H. F. Shepard. I have referred this species to the genus nearly as restricted by Dr. Gray, including with it *Plistodon* and *Otosaurus* of his catalogue, as forming together a definable genus.

#### SEPSINA Bocage.

##### SEPSINA GRAMMICA Cope.

Scales in 22 rows. Limbs small, the anterior one-third the length of the posterior; toes 3—3. Nostril between four plates; frontonasals and internasals united into a shield which is broader than long. Supraorbitals and superciliaries four each on each side. Frontal concave behind, and wide as long; interparietal nearly as wide, large; two pairs of parietals, the interior meeting behind; two pairs transverse plates behind them. Nasal, loreal and preorbital present; rostral flattened, not acute. Eye over fourth labial. Anal and abdominal plates equal. Ear minute.

Length to ear 8" (French); to axilla 15" 75''''. Axilla to groin 5' 5'''. Fore limb 2'', posterior limb 7''. Tail elongate, mutilated.

Below brownish yellow, above fawn brown; four rows of scales on each side, with a dark line in the centre, forming interrupted streaks. Hind limb streaked above in the same way. Tail more distinct, spotted, on the under surface faintly; above dark banded.

This species differs from the type described by Bocage, (*Journal de Sciences, Mathematiques, Physicas e Naturæ* Lisbon, 1866, 26), in its coloration, in having two rows of scales less; in having fore limbs very much smaller, less than one-third the posterior, (they are more than one-half the same in the *S. angolensis* Boc.). In the latter the internasal and frontal are much more elongate, and the interparietal very much smaller, according to the description and figure of the above author.

Museum of the Essex Institute. No. 512. Discovered by Edmunds Lovett, on the South-West Coast of Africa.

##### OEDURA VERRILLI Cope.

The femoral pores in a series arched angularly forwards and not extending on the femora. The plates of the under surfaces of the toes are besides the terminal discs, one pair only, as large as the terminal and at the end of the antepenultimate phalange. Labials regular, 8—7 to below pupil; two rows infralabials across chin. Rostral undivided. Gular scales granular; thoracic and ventral flat, larger than the flat dorsals. Muzzle scales tubercular. A tubercle on each side vent. Head as broad as from end of muzzle to half way between orbit and ear. Color very pale above, with six very deep brown cross bands from nape to sacrum, which are more or less connected on the des. A brown band through orbit, and one behind, crossing the occiput.

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Muzzle to ear 12''; to axilla 20''·5. Axilla to groin 25''; tail lost. Fore limb 13''; hind limb 18''.

With *Diplodactylus marmoratus* Gray, from Australia. No. 724. Mus. Comparative Zoology, Cambridge, Mass.

Dedicated to my friend Addison E. Verrill, Professor of Zoology in Yale College, Connecticut.

[*PEROPUS* Wieg.

Three species of this genus before me differ from those described, and may be compared as follows:

I. The tail much depressed, and with a series of broad shields below.

Margin of tail minutely serrate; two internasal plates; mental plates abruptly different from gular scales, in one cross row of six, and smaller ones at the angles in front of a straight cross-line. Pale brown with close reddish speckles..... *P. packardii*.

II. The tail broad, depressed, slender, with small scales below.

A few internasals, two longitudinal rows, hexagonal mentals; gray with scattered brown spots..... *P. mutilatus*.

III. Tail thickened, depressed, cylindrical, without serration; scaled below.

Four cross rows ovate mental plates, the posterior smaller; three internasals; pink-grey, with brown later shade, with pairs of black dots on each side the middle line, which form striæ on the scapular and crural regions. Tail subcylindric..... *P. roseus*.

Two cross-rows ovate mentals, those behind graduating through several rows to the gulars; four internasals; tail swollen; light gray with a brown band on each side..... *P. pusillus*.

*PEROPUS PACKARDII* Cope.

This is a stout species. Günther's description of *Peripia peronii* Gray applies well to this, but in our animal the toes are all strongly palmate at the base.

Upper labials 9—7 to under the eye, lower seven; symphyseal large, triangular. Gular scales very minute, ventials larger than laterals, and laterals than dorsals. A thick femoral fold behind. Pores in a long line, from 35 to 40.

Light reddish brown, with small bay specks all over the upper surface. Several small round bay margined spots on the occipital and temporal region.

Head and body to vent 42''; muzzle to ear 11''·5; width at ear 8''·7, of tail 6''. Length of hind limb 14''·7.

Penang, Malacca. No. 476. Mus. Peabody Academy, Cambridge, Mass.

*PEROPUS ROSEUS* Cope.

This species is remarkable for its nearly cylindrical tail. I find no femoral pores in two individuals, but a rather large series of scales abruptly divides the granular from the scaled portion of the femur, in their position. Upper labials eight to below orbit. No posterior femoral fold. Dorsal scales extremely minute. General form more slender than in the last species.

A black spot on each scapular, and one above each axillary region; one on the iliac, and a line above each ischiadic region; a row of black dots on the vertebral line of the tail. A brown band from end of muzzle to ear, then a black line to axilla.

Total length 77''; to vent 40''; to ear 10''; width at ear 4''·7.

No. 735. Mus. Comparative Zoology.

*PEROPUS PUSILLUS* Cope.

This little reptile differs from the last in the three structural and fourth coloration characters, beyond which it is difficult to observe further peculiarity. There are nine superior labials to below the pupil; there is no

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femoral fold, nor are there femoral pores. Color light brown, with a much paler dorsal shade; a brown band through orbit to axilla, and band across muzzle. Tail with a series of pale rounded spots on the median line above.

Total length 59''; to vent 35''; to ear 9''; hind limb 12''/5.

No. 407. Mus. Peabody Acad. S. W. Australia.

#### HEMIDACTYLUS Cuv.

##### HEMIDACTYLUS LONGICEPS Cope.

This species is like the *H. coctæi* D. B. in its very sparse tuberculation, for this appears in a single line of obtuse distant warts, on each side the lumbar region only. The thumb has a claw, however, and the tail is surrounded by rings of prominent tubercles. It has fewer tubercles than the *H. frenatus*, and differs further in having a long flat slender muzzle. The width of the head behind the orbits does not measure from the end of the muzzle to the posterior margin of the orbit, while in the *H. frenatus* it reaches the rictus of the mouth. Labials 10—9; mental projecting behind; postmentals two pair, the outer considerably smaller, the inner largely in contact. Femoral and preanal pores in one series.

Light reddish-brown, with a pale dark brown bordered ochraceous band from the end of the muzzle to the groin. Dorsal region brown-shaded; below white.

Length to vent 47''; to axilla 24''; to ear 13''.

Manilla; from Capt. J. W. Chever. Mus. Peabody Academy, Salem, Mass. No. 478.

##### HEMIDACTYLUS HEXASPIS Cope.

Tubercles flat, round, sparse, in a row on each side the median vertebral line, and three rows on each side, at a distance from the former. Caudal tubercles in three rows on each side. Labials 11—8, symphyseal produced behind; postmentals abruptly larger, three on each side, the median pair in contact half their length, the outer diminishing regularly. Femoral and preanal pores continuous in the male, both wanting in female. Three internasals; no tubercles on head or nape. Abdominal scales ovate, rather large.

Plumbeous above, with numerous pale blotches; a pale band from end of muzzle to groin, margined with leaden above and below, in the female with blackish; top of muzzle dark shaded above.

Length to vent 57''; to axilla 25''; to ear 13''.

Two specimens from Madagascar. No. 494, Mus. Peabody Academy.

This species is also related to the *H. frenatus*, but differs in the arrangement of the dorsal tubercles, and in the chin shields.

I may note here that the *Liurus capensis* (*Hemidactylus capensis* Smith, Zool. S. Afr.) occurs in the copal of Zanzibar. A specimen over two inches long, enclosed in a block of this substance, is in my possession. Its skeleton and viscera have been dissolved, and form a thick fluid easily visible on moving the specimen. The specimen has been included some time before the solidification of the gum, as the gases evolved during decomposition have raised large bladders in two places in the specimen. Another Gecko, probably a *Hemidactylus*, also occurs in the copal.

##### PENTADACTYLUS BRUNNEUS Cope.

Nostrils surrounded by four small shields and the first labial, the rostral being excluded. The anterior of the scales separated from its fellow by a polygonal scale, which is not included in a notch of the rostral. Rostral fissured above. Superior labials eleven, last two minute; two or three of them longer than high. Distinguishable inferior labials nine; two first much deeper than long. Infralabials not marked, forming some four or five rows of small ovate scales. Scaling of the body coarse. No superciliary spine; no preanal pores. Free joints of the toes, especially of the thumbs, thick.

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Tail with whorls of flat hexagonal scales, abruptly separated from those of the sacrum above.

Color above brown, with seven irregular undulate, transverse bars of a very deep brown, between rump and nape. Below pale.

	In.	Lin.
Total length.....	5	7.5
Length from muzzle to vent.....	2	8.5
“ “ “ axilla.....	2	4
“ “ “ ear.....		9
“ “ “ orbit.....		4
“ of hind limb.....		14

Australia. Mus. Jardin des Plantes, in ex.

This species is nearest the *Pl. duvaucelii* D. and B.; the differences may be readily determined by comparison with Günther's description in Reptiles Brit. India.

*PTENOPUS MACULATUS* Gray, Proc. Zool. Soc., London, 1865, 640.

*Character genericus.*—Toes with transverse series of very narrow, simple plates beneath. Posterior toes all turned forwards, with a series of long processes forming a fringe on each side; posterior claws issuing from above a broad parallelogrammic lamina. No femoral pores. Ears distinct. Nostril pierced in a single plate. Eyelids each half developed.

This genus is near to *Stenodactylus* Cuv. and *Spatalura* Gray, but differs markedly from both. The tail is not flattened and fringed as in *Spatalura*, while the terminal plates of the toes and single nasal plates are marked characters.

As Dr. Gray referred this genus to the Agamidæ I was induced to make an examination of the skeleton. As a result of this, I am satisfied that it belongs to the suborder of the Nyctisaura and the family Geconidæ. In evidence for this I append the following characters: 1. The dentition is pleurodont. 2. The parietal bones are separate. 3. The vertebræ are amphicælian. 4. There is no subarticular bone. 6. The coronoid process of the mandible is not produced posteriorly. As characters of a higher or a lower significance the following may be added. The angular bone is distinct, there are four abdominal ribs, and three attached by long hæmapophyses to the posterior margin of the xiphisternum. The dentary bone is prolonged below unusually far posteriorly, *i. e.*, to half way between the coronoid and articular processes.

*Character specificus.*—Head large, slightly compressed. Muzzle short, obtuse. Nasal plates two, forming a round disc, which is only in contact with the nostril and first labial, and separated from its fellow by a granule. This disc has its posterior third separated from the remainder by a suture; the nostril is in the anterior plate near the suture. Rostral not fissured, broader than high. Superior labials longer than high, large, seven on each side. Inferior seven (to opposite sixth superior) narrow, longitudinal. Symphyseal prominently rounded below, broader than high. No infralabials; gulars not smaller.

Dorsal scales equal, hexagonal, flat; nuchals minute, occipitals, frontals and nasals a little larger than dorsals, flat. Caudals equal to dorsals, flat, whorled. Tail vertically flattened at the end. Fingers and toes long, slender; former lengths 5—1—2—4—3; toes 1—5—2—3—4. Fingers not fringed; claws long, compressed, not concealed, but with a smooth basal sheath. The posterior toes are entirely different, in the long fringes, terminal plates, and the perfectly straight spine-like claws, which project from the middle of the end of each plate; the arrangement is a little like the body of a slender *Oniscus*, whence the name of the genus. The long cross-plates are not serrate, but are rigid; they are separated from the series of fringe-like scales by some series of granules. The tail is slender, short, and slightly compressed. No tubercles at base. Vent with a short fringe all round.

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	In.	Lin.
Total length .....	3	6
Length to vent .....	2	1
“ “ axilla .....		11
“ “ ear.....		5·2
“ “ orbit.....		2
“ of hind limb.....		12·5
“ “ foot.....		6
Width of head at ears.....		5

*Color*.—Above light gray, with a rose shade on the neck and nape. Five pairs of irregular black annuli, one on each side the vertebral line, from rump to nape. These are more or less broken, especially anteriorly. They are replaced by scattered linear spots on the top of the head. The arrangement reminds one of that seen in the *Felis uncia*. Seven pairs of spots on the upper surface of the tail form cross-bars. Labial plates brown edged; below everywhere delicate straw color.

Habitat at Cape of Good Hope. No. 725, Mus. Comparative Zoology, Cambridge, Mass.

This interesting little Saurian is furnished with a large calcareous mass on each side the neck behind the *os quadratum*, which gives its head an appearance of length. It is no doubt an inhabitant of a sandy region, judging by its color and the structure of its hind feet, which appear to be adapted for excavating. It is no doubt allied to the *Stenodactylus garrulus* of Smith, but differs in numerous respects from the description of the latter author.

*LETHEOBIA PALLIDA* Cope, gen. et sp. nov. Typhlopidae.

*Char. gen.*—This genus differs from Typhlops in the subdivision of its ocular plate into two scales similar to those of the body; the superciliary plate is also undistinguishable from the latter. There appears to be no eyes. Superior labials three.

This genus is between Typhlops and Helminthophis Peters, differing from the latter in its erect nasal plate, with nostril on the superior suture. The *Onychocephalus caecus* Duméril, from Gaboon, appears to belong to this genus; the two species may be distinguished as follows:

Muzzle obtuse; rostral very wide, largely in contact with the superciliary plates; nasal large..... *L. pallida*.  
 Muzzle transversely acute; rostral not reaching to superciliary plates; nasal minute..... *L. caeca*.

*Char. specif.*—Rostral subquadrate viewed from above, nearly as broad as long, in contact nearly equally with three scales above the fronto-nasals,—viz., the frontal and two superciliaries. The subocular a little larger than the ocular; behind these a series of seven scales from the rictus to the median row, on each side. Preocular and fronto-nasal of equal width, the latter sending a very narrow point to the second labial behind the wider nasal. Nostril very near the rostral suture. Tail as long as width of head, acuminate. Scales equal, in twenty-two longitudinal rows. Form quite slender. Length 6 in. 3·5 lines; diameter at middle 1·25 lines. Color pale flesh-color.

*Habitat*.—Zanzibar. Presented by C. Cooke to the Essex Institute, Salem, Mass. (Mus. 504.) It was taken from a well. Mus. Acad. Nat. Sci. Philada.

*THRASOPS CITRINUS* Cope, sp. nov.

Body slender, compressed, tail short for the genus. Gastrosteges rounded and elevated on the sides. Scales in seventeen rows, poreless, all strongly keeled; the median more lanceolate; the surface of all finely longitudinally striate. Head quite distinct; muzzle not long, flat, truncate; canthus rostralis straight, angulate, lores<sup>s</sup> plane. Supranasals a little longer than broad; frontal elongate, not concave laterally, occipitals a little longer. Post-frontals descending to labials, no loreal; oculars 1—3. Superior labials nine,

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fourth, fifth and sixth in orbit, last three longer than high; temporals 1—2. Ten inferior labials, postgenials longer than pregenials.

Total length 23.5 in.; to vent 17 in.; to rictus oris 7 lin.; to orbit 1.5 lin. Gastrosteges 197, urosteges 105.

Yellowish-brown above, gastro- and urosteges rich yellow. Top of head brown, lips paler, the upper edges of the plates light, continuing into a streak to belly.

From the Seychelle Islands; found by U. S. consul Pike. Mus. Acad. Nat. Sciences.

#### Notes on some points in the Structure and Habits of the Palæozoic CRINOIDEA.

BY F. B. MEEK AND A. H. WORTHEN,

Of the State Geological Survey of Illinois.

Through the kindness of Mr. Charles Wachsmuth, of Burlington, Iowa, we have recently had an opportunity to examine some unique and exceedingly interesting specimens of Carboniferous Crinoids, showing parts of the structure of these animals, in some instances, never before observed, so far as we are at this time informed. In a few instances, these specimens show internal organs entirely free from the matrix, and although like all the other solid parts of these curious creatures, composed of numerous calcareous pieces, really surpassing in delicacy of structure the finest lace-work, and so frail that a touch, or even a breath, might almost destroy them.\* Some of these specimens we propose to notice here, but, before proceeding to do so, we avail ourselves of this opportunity to express our thanks to Mr. Wachsmuth for the zeal, industry, skill and intelligence he has brought to bear, in collecting and preparing for study, such an unrivaled series of the beautiful fossil Crinoidea of this wonderfully rich locality. Some idea of the extent of his collection of these precious relics may be formed, when we state that of the single family *Actinocrinidae* alone, after making due allowance for probable synonyms, he must have specimens of near 150 species, or perhaps more, and many of them showing the body, arms and column.

It is also due to Mr. Wachsmuth, that we should state here that he is not a mere collector only, but that he understands what he collects, and knows just what to collect, as well as how to collect.

Below we give substantially some notes of observations made in his collection, followed by some remarks on other specimens at Springfield:

1. *Synbathocrinus*, Phillips. Some of Mr. Wachsmuth's specimens of a species of this genus show that it is provided with a long, slender, pipe-stem like ventral tube, or proboscis, apparently equaling the arms in length. Also, that a double row of minute alternating marginal pieces extends up within the ambulacral furrows of the arms, apparently all their length. We are not aware that these characters have been hitherto noticed in any of the publications on this genus. It will be seen, however, farther on, that minute marginal pieces probably occupied the furrows along the inner side of the arms of other types of Crinoidea, as well as this.

2. *Foniasteroidocrinus*, Lyon and Casseday. Some unusually fine specimens of the typical species of this genus (*G. tuberosus*) in Mr. Wachsmuth's collection, from Crawfordsville, Ind., show the slender pendent arms much more distinctly than any we had before seen, and from these it seems evident that these arms are stouter than we had supposed, and that there are not more than five or six of them to each of the ten openings. In the specimen figured by us on page 220 of the second volume of the Illinois Reports, these arms were only imperfectly seen by working away, with great difficulty, the hard matrix be-

\* By Mr. Wachsmuth's permission, we have prepared for future publication, drawings of all of these instructive specimens.